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Analyzing the Relationship of Voluntary Student Participation in Optional Exam Review Sessions with Academic Self-Efficacy and Academic Performance¹

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Abstract

Much research has been conducted on the topic of self-efficacy and its relationship to student performance. In alignment with the theory of self-efficacy and research performed by Bandura (1993), Schunk (1989, 1991), Zimmerman (1985, 1990), Multon, Brown and Lent (1991); and others, the purpose of this action research study was to determine the relationship of student voluntary attendance at a minimum of one of two optional exam review sessions and whether or not it resulted in a feeling of increased confidence about their potential performance on the exam compared to those students who did not attend the review. Additionally, the study reviewed grades on major course assessments for the students attending the review sessions ($N=199$) compared to the grades of students who did not attend the review prior to taking the exam ($N=51$) in order to determine if there was a significant difference in performance of the two groups. Data were collected using a descriptive survey and a review of student grades. Descriptive statistics, correlations, chi-square and t -tests were used to analyze the data.

Purpose

The purpose of this study was to examine the relationship between the development of student self-efficacy or belief in one's capability (Bandura 1977b, 1986, 1993, 1997) toward exam performance as a result of attending exam review sessions conducted by the professor. The study "college" is a medium-sized, nonprofit, NEASC-accredited, private, multi-campus institution. The nearly 16,000 students at the university represent all 50 states within the U.S.A. as well as 90 countries. The study was conducted at the campus in Rhode Island, where the majority of the students are residential. All the subjects were undergraduates, many of whom were attending college for the first time in their families. All participating in the study were full-time students enrolled in a four-year degree program. The institution offers a unique curricular approach: a university education with an experientially-focused curriculum intended to prepare students for meaningful careers.

According to collegeboard.org the admissions standards at the "college" are considered less selective, with 81% of students enrolling actually accepted. Average ratio of students to faculty members is 15:1, suggesting better-than average student to faculty contact and connection. Average retention rate is quite high, with seventy-nine percent of students who completed their freshman year returning as sophomores. A study of student responsibility shows that the majority of undergraduate students work part-time while enrolled full-time at the

institution which may be a reflection of both the career-focused curricular approach as well as financial need of students.

There is a mix of practices used to prepare for exams occurring at the “college” and the researchers were interested in determining if the practice of giving a formal review impacted the self-efficacy of students who attended. The class session prior to the final exam is designated as a university-designated “reading day”, where students can schedule one-on-one conferences with their professors in preparation for the final exam. In the first practice, many faculty members follow the designated “reading day” as it was intended. All faculty members are required to be in their offices on reading days in case their students visit seeking help. In the second practice used on reading days, some faculty members opt to provide formal reviews instead of following the standard “reading day” format. Faculty members who provide review sessions do so for a variety of reasons. It is unclear how many professors consistently provide review sessions for final exams. Other exams are also given at various intervals earlier in the term where no reading days are designated by the “college” administration. Professors who offer review sessions on “reading days” also frequently schedule voluntary review sessions prior to the exams earlier in the term. Professors cannot make attendance at any review sessions mandatory. Students have the option to participate and cannot be penalized if they don’t attend. The purpose of this action research study was to determine the relationship of student voluntary attendance at a minimum of one of two optional exam review sessions and whether or not it resulted in a feeling of increased confidence about their potential performance on the exam compared to those students who did not attend the review.

The results of this action research study may be used to influence in-class pedagogical practice in order to help students improve feelings of confidence and academic performance. It may also be used to influence the standardization of exam review sessions, transitioning the current format from a voluntary “reading day” format to one where faculty members may require a review session that helps to increase student practice with course content prior to assessment and thereby potentially influence feelings of self-efficacy related to academic performance.

Background

Regardless of age, a student may struggle with mastering academic competencies. Many things influence this process, ranging from self-concept, passion for a subject, personal or programmatic goals set for minimum acceptable performance (reflected by grade point average), connection with the teacher, and an ability to perform with confidence among peers in the public arena of the traditional classroom. By the time a student reaches college-age, the complexities of the process increase as his/her self-concept undergoes continued development that includes selecting a degree program which will (ideally) lead to a career that will arguably influence a good portion of his/her adult life. A growing need for self-efficacy is necessary in order to ensure achieving such purpose, enabling the college student to reach what John Gardner (1963) referred to as self-education. Here the student may expand self-concept and intrinsic motivation

that may lead to feeling fulfilled in the process, eventually graduating, and ensuring success as a lifelong learner.

A student's self-concept has been known to be closely related to academic performance (McCombs, 1989). Self-concept is an individual's collective self-perceptions that are (a) formed through experiences with, and interpretations of, the environment and (b) heavily influenced by reinforcements and evaluations by significant other persons (Shavelson & Bolus, 1982). Self-concept is multidimensional and comprises self-esteem, self-confidence, stability, and self-crystallization (Rosenberg & Kaplan, 1982). Self-concepts don't focus on accomplishing a particular task, but rather incorporate various forms of self-knowledge and self-evaluative feelings (English & English, 1958) to moderate a sense of being able to accomplish a certain goal.

Bandura (1977a) and Schunk (1989) took the understanding of self-concept one step further by relating it to the potential feelings of self-efficacy: The judgment of who one is relates to self-concept. However self-efficacy involves taking one's self-concept and applying it to a context-related judgment of one's capability to organize and execute a specific course of action to achieve a specific educational performance. They developed a way to measure self-efficacy, which was a complicated task since it varies in the complexity of a task (level), the ability to transfer self-efficacy from one activity or subject matter to the next (generality), and the degrees of certainty that one can perform a task (strength). One of the most challenging elements of measuring self-efficacy is the fact that it is based on one's judgment of capability to perform activities rather than actual personal qualities such as physical abilities or psychological traits that will enable the student to be successful. Another challenge is that efficacy beliefs are not one-dimensional; they can be linked to several domains of functioning. The efficacy felt towards mathematics may differ from performance beliefs felt towards English composition—which was a significant realization since many of Bandura's self-efficacy studies involved mathematical problems. Additionally, one's self-efficacy can be helped or hindered by many influences not related to personal ability. A student's confidence to perform, for example, can be impacted by a variety of circumstances outside their control, such as if they're expected to learn in a highly competitive classroom environment rather than a cooperative one. To add to this confusion, a competitive versus a cooperative classroom environment may be influenced by the professor's teaching style and/or the personalities of the other students.

Particularly salient to this study, the measurement of self-efficacy may be dependent on whether the student has a sense of a mastery criterion for performance as opposed to one based on norms or other criteria. Such mastery criterion may require objective guidelines and reinforcement such as might occur during the practice that happens associated with an exam review. As described by Bandura & Schunk (1981), the student rates their certainty that they can perform a task of various levels based on objective or concrete criteria as opposed to being compared to other students' performance. Key to the measurement is timing; the student's judgment of their self-efficacy is measured before the relevant activities are actually performed. Gaining an understanding of the student's belief regarding their preparedness and/or the fact that

they will be evaluated based on mastery criterion is key to determining the strength of the self-efficacy.

Expectancy-value theories (Atkinson, 1957; Feather 1982) assume that human behavior occurs as a result of people's expectations that if they engage in a particular behavior then certain outcomes will occur, along with the value of those outcomes. However, if a student's self-concept is low and the educational outcome is seen as unachievable or valueless, students won't be motivated. But Bandura (1991) has argued that outcome expectations and values (i.e.: doing well on an exam and the feelings of accomplishment that come from the experience) alone will not ensure high performance. While students may desire these outcomes and commendations, they may choose not to pursue the academic activity (such as an exam review) because they either were not given adequate mastery criterion to succeed or they lack the capability to succeed in part due to low self-concept. The combination of a strong self-concept and presentation of mastery criterion lead to the development of self-efficacy over time; the combination of factors is important. The relation between self-efficacy and outcome expectancies were studied by Shell, Murphy and Bruning (1989) in relation to reading and writing achievement and they felt that only perceived self-efficacy was a significant predictor of writing achievement. This is particularly important in relation to the students on campus one of this study, whose tests (midterm and final exam) were each comprised of a written essay.

Research Questions

In order to explore the relationship between self-efficacy and academic performance at the College, the following research questions were asked:

1. What are the most common reasons students participate in voluntary exam review sessions in preparations for an examination?
2. What percentage of a class of students will voluntarily attend an exam review session if it is offered during class time, such as on reading days?
3. Do students who voluntarily participate in exam review sessions as a means of studying for an examination strengthen their academic self-efficacy in regards to potential performance?
4. Are the actual grades earned by the students attending a voluntary exam review session related to increased self-efficacy?
5. How different are the exam grades for students who attended a review compared to the performance of students who did not?
6. What percentage of students said they would usually attend an exam review session if it was offered (in place of only offering a reading day)?

The Need for Additional Research

Social Cognitive Theory

A student's ability to perform academically is dependent on many factors. The "College's" undergraduate students in a variety of different majors approach various social science courses in different ways in order to ensure their academic success. Understanding how the environment, cognitive, behavioral and personal factors interact to determine motivation and behavior is the premise behind Albert Bandura's Social Cognitive Theory, of which self-efficacy is a part. The Social Cognitive Theory proposes that individuals do not simply respond to environmental influences, but rather they actively seek and interpret information (Nevid, 2009). When students commit to attending and participating in an exam review session, they become contributors to their motivation, behavior, and development within a network of reciprocally interacting influences (Bandura, 1999). Commitment to activities within their environment, the classroom, influences their beliefs about their capabilities of successfully completing tasks or goals—in the case with this study, they are able to see themselves as doing well on the exam. In participating in the group review, the student sees himself/herself as being able to intentionally change, develop and adapt to a given situation. "In this view, people are self-organizing, proactive, self-regulating and self-reflecting (Bandura, 2005, p.1).

Self-efficacy and Motivation

In order to be academically successful a student must find a relationship between three assessment processes which are "analysis of task requirements, attributional analysis of experience, and assessment of personal and situational resources/constraints "(Gist & Mitchell, 1992). Task requirements suggests that a student can determine what it takes to perform the task: whether or not they've done their readings, taken good notes, and are they aware of the mastery criteria needed to do well on the test. Attributional analysis occurs when a student is able to judge why a specific performance level occurred. Assuming assignments leading up to the exam were designed to build the student's understanding of the course content, and if they were successful on them, then presumably they should feel confident that they've mastered the content that will be included on the exam. Finally, the student must assess personal and situational resources/constraints. If a student attends a review that occurs in a classroom led by the professor, s/he may assume that the environment is controlled and therefore time on task will be strong, staying focused on covering the required elements for the exam. The professor feedback provided during the review may also help give the student an indication of how well s/he is prepared to take the exam. "Rewards (of the feedback) enhance efficacy when they are linked with a student's accomplishments and convey that the student has made progress in learning" (Schunk, 1991, p. 219). The relationship between these three assessment processes can help to build a student's feeling of self-efficacy, thereby motivating them to take part in organized exam reviews.

Offering an in-class review session may lend itself to greater self-efficacy in the students based on the fact that it provides them with one final opportunity to actively evaluate the influences of their environment, cognitive abilities, behavior and personal factors mentioned previously with Social Cognitive Theory. While this study is not directly about the environment, students do acquire valuable information about their progress by watching others, both students and the professor, perform. In a well-planned and successfully moderated exam review session peers and the professor serve as valuable role models for academic performance. Even if the individual student is not completely successful participating in the review, observing others succeed can convey that the possibility for success lies in their efforts too and therefore can motivate them to persist with the review, to work hard in preparation for the exam, and to see themselves performing well on the exam too. Since students at the “college” are accustomed to the standard practice of preparing for exams by studying independently, the opportunity to take part in a group exam session led by their professor may be a tool for building self-efficacy.

Whether a student chooses to attend an exam review is not, in and of itself, a measure of self-efficacy. Even though Bandura cited much evidence that self-efficacy influences choices of activities, effort, and persistence (1986), the situation is more complex because in school learning is taking place. In school, for example, choice of activities is not a good index of motivation because students typically do not choose whether to participate in learning activities (Brophy, 1983). Schunk (1991) suggests that choice may be meaningful under a limited set of conditions, such as activities during free time; it represents a narrow motivational focus because choices available to students usually are limited. The fact that the exam review is scheduled during the normal class meeting time, that students have been “released from” for the sake of the reading day, makes it in a sense, free time. This fact, combined with a certain sense of attributional attainment and a desire—a goal—to be successful on the exam is more likely the explanation. As Bandura pointed out with his Social Cognitive Theory, this convergence of three assessment processes: analysis of task requirements, attributional analysis of experience, and assessment of personal and situational resources/constraints must converge in order to motivate a student towards taking action and gaining a sense of self-efficacy.

Self-Efficacy and College Students

Many of the studies in the literature on self-efficacy and academics involve elementary school students, with a few others focused at the middle school level. A growing body of research has been conducted on students at the high school and college level, although it still lags behind the self-efficacy research on younger students. In their meta-analytic study, Multon, Brown and Lent (1991) found a higher relationship between perceived self-efficacy and academic attainment among high school and college subjects ($r=.41$ and $r=.35$, respectively) compared to ($r=.21$) of elementary-aged students. Multon and her colleagues speculated that this difference may exist because the older students may be better able to assess their academic capabilities as a result of their longer experience in school and formal learning.

Self-Efficacy in Relation to Various Academic Subjects

A large portion of the research in self-efficacy has been conducted in the subject area of mathematics. Expanding on the course subjects (beyond math) in which reviews are conducted prior to the examination may provide additional insights into the relationship of self-efficacy to academic performance, particularly at the college level. In this study the entire sample was taking one of two social sciences courses. These courses were required as part of degree completion for most students, and because they did not elect to take them, it may suggest that some students had a different level of commitment to the content than others. Additionally since both courses were in the social sciences, their content reflected more of an integrated learning approach, one where students practice a multi-disciplinary approach to a subject that requires comprehension of all six social sciences as well as communication of ideas that mimic life situations. Integrated learning courses deliver materials that may be less concrete than the content in mathematics courses, thus requiring students to develop a different level of self-efficacy needed in order to effectively communicate the thought process of critical thinking. Assessment format in integrated learning courses is likely to be significantly different than math courses as well. An essay-format exam may require a different skill set and feeling of self-efficacy than one requiring a student to complete a variety of equations or word problems.

Methodology

This study used an action research design to evaluate the relationship of exam review attendance with self-efficacy and exam performance. On the first day of the course students were notified of the dates, times and locations of all available review sessions corresponding to exams for the eleven-week term, providing the students with information needed to plan attendance and enabling them to proactively schedule the activities into their academic and work schedules. Information was included on the printed course outline received by all students.

Sample

The study involved $N=250$ full-time undergraduate students enrolled in one of two different social sciences courses. The courses, delivered in a traditional classroom setting, involved eight different sections of two different courses, each of which was taught for a term of 11 weeks. The study took place over 16 months, starting in the spring term and ending at the conclusion of the spring term of the following calendar year. All students enrolled in the courses were given the opportunity to participate in the study, but not all elected this option. A sample of $N=199$ chose to participate in at least one exam review session and agreed to participate in the study. Participants were ensured confidentiality.

Data Collection Procedures

The students attended the eight sections of the two courses on two separate campuses affiliated with the same institution but located in different parts of city. After completing a portion of the course work relative to the upcoming exam, all students were verbally reminded

(in week four for midterm exam and week 10 for the final exam) about the upcoming exam review sessions that would be conducted by their professor during class time the following week.

Regardless of whether they would actually attend the review or not, one week before the exam all students were given a study guide which informed them of information they should be able to show mastery of on the exam, how they would be assessed, and how long they would have to complete the assessment. They were also instructed what to bring to the review session if they would be attending.

A one-hour, fifty minute review was offered by the professor during the class meeting prior to each exam. The midterm review session was scheduled into the course calendar, during a normal class period during the term. The university has a liberal attendance policy and students are not required to attend any class once their attendance is confirmed after the second class meeting. Therefore technically any class—including a review scheduled during normal class time—is voluntary. The final exam review session was conducted during the reading day which is scheduled by the university each term. Reading days, one per course, are intended to be voluntary, providing students time to meet one-one-one with professors to clarify course content/progress prior to the exam. Since attendance at a review on the reading day is considered voluntary, students are not required to attend the review and professors are not allowed to deduct points for lack of attendance.

After each review was completed and before starting the exam (Bandura & Schunk, 1981), students ($N=199$) were given a one-page descriptive survey (Appendix A) which aside from collecting demographic information, asked seven questions which pertained to such things as why they had attended the review, whether they usually attended such review sessions when offered for other courses, whether they felt more confident preparing for the exam as part of a group as opposed to studying alone, if they felt more confident that they were better prepared to take the exam as a result of the review session, and would they attend other voluntary review sessions as practice before exams if other professors provided them? Students completed the survey and if they were willing to participate in the study, they were asked to sign a consent form. In addition to the survey instrument, student grades were reviewed on major assignments in order to determine the relationship of student self-efficacy to actual exam performance for both the exam review attenders ($N=199$) and those who chose not to attend the exam review ($N=51$).

The primary measure of academic performance in relation to the review was the examination. Course one assessed student understanding of course content using an essay question while course two assessed student mastery of content using an objective test format that included multiple choice, matching and true/false questions. The review format for each course was designed to complement the different formats of the tests.

Other measures of academic performance were used to correlate perceived student self-efficacy beyond the exams. These assignments included quiz average (which used an objective format), major written assignments, and the final course average. It seemed valuable to determine if self-efficacy may have also been related to student performance on these major

assignments. In both courses on both campuses there were eight major assignments, one due almost every week. Four of these assignments were completed prior to the midterm review and four of the assignments were completed after the midterm test but before the final review and exam. Students completed these assignments as homework, without time limits, in conjunction with their text readings, and responding to a variety of questions provided by the professor. Students could use any outside sources necessary to answer the questions. Final course average was also used to correlate self-efficacy to academic performance.

Data Analysis

The data collected via the survey instrument and scores on various course assessments from each term were analyzed using SPSS software to generate descriptive statistics, correlations and *t*-tests. In addition to seeking an understanding for the primary incentive behind students participating in exam reviews, the researchers also wanted to understand how the scheduling of reviews influenced whether students participated. The final determination of how to analyze the data was determined by what kinds of correlations and relationships could be drawn from perceived self-efficacy and academic performance on various assignments. These also helped the researchers understand the differences in performance to the specific course and the campus on which the course was taken.

Findings

Question 1: *What are the most common reasons students participate in voluntary exam review sessions in preparation for an examination?*

On question 1 of the survey (Appendix A) students were asked to select from a list of seven choices the primary incentive for taking part in the voluntary exam review session. Most students only chose one response, while others selected more than one, which was an option. The three most common reasons for attending the review session included: “I needed the review” (18%), “I needed help studying and felt the group session would benefit me” (33%), and “I want/need a higher score on my exam” (39%). Each of the most common reasons selected suggest that the student had identified that the in-class review would be beneficial, with the options chosen most frequently suggesting alignment with improved self-efficacy.

The other incentives they could choose from included “extra credit was offered”; “I was required to attend by my professor”; “I was encouraged to attend by my academic advisor or counselor in the Student Achievement Center”; or “other”. Of these options most students selected “other” and some provided comments to the researcher that included such statements as, “These review periods really help me feel confident, enforcing what we learned and how it (the readings) reflect to sociology”; “To support my knowledge on the subject”; “I felt it would benefit me greatly”; “Outlines (we do during the review) are really helpful”; “Needed help to better understand concepts from class work”; and “I like the style of these reviews. They provide me with the opportunity to express what I’ve learned in class without feeling overly

stressed beforehand.” As with the most common reasons selected above, these unsolicited comments suggest that the student’s self-efficacy was impacted.

Question 2: What percentage of a class of students will voluntarily attend an exam review session if it is offered during class time, such as on reading days?

For this study all exam reviews were offered during normally scheduled class time (Appendix A, Survey questions 2, 3, and 4). Of the total number of students attending the eight sections of classes ($N=250$), 80% chose to attend the optional final reviews ($N=199$) while 20% ($N=51$) chose not to. There was neither academic penalty (points deducted from their participation grade) nor incentive (extra credit points offered for attending) for attendance or lack thereof at the review. One noted detail was the difference in review attendance based on the two different courses surveyed. Of the eight total course sections participating in the study, six sections were taking course one and two sections were taking course two. Course one was a 3000 level undergraduate course, attended mostly by sophomores, juniors and seniors. Ninety-five percent of students enrolled in this course participated in at least one of two reviews offered. Course two was a 2000 level undergraduate course, enrolled in largely by freshman and sophomores. Forty percent of the total students enrolled in this course participated in the review. So while 80% of the total number of students in all sections ($N=250$) attended at least one review ($N=199$), there were significant differences in attendance between the two courses. Also noted with these differences is that the two courses were held on different campuses.

Table 1 use initial caps in table titles

Comparison of student attendance at exam review(s) across eight course sections

	Total # In course	1 review (midterm)	1 review (final)	both reviews	No review
Course 1, campus 1	182	46	13	113	10
Course 2, campus 2	68	N/A	27	N/A	41

Table 2 center column headers

Comparison of student attendance at exam review(s) by sample

	Total sample	Midterm review	Final exam review
Course 1, campus 1	182	159	126
Course 2, campus 2	27	N/A	27

Total sample by review	199	159	153
% of sample w/access to review		87%	77%

Question 3: *Do students who voluntarily participate in exam review sessions as a means of studying for an examination strengthen their self-efficacy in regards to potential performance?*

Pertaining to both questions 5 and 6 on the survey, 94% of the students felt that the exam review sessions made them feel “more confident preparing for the exam as part of a group, as opposed on my own” and “better prepared to take the exam”, while 6% on both questions indicated that the review did not help their self-efficacy towards the exam.

Students perceived a greater academic self-efficacy as a result of having participated in the review. There was no relationship between campus affiliation and feeling better prepared for the test ($\chi^2 = .984, p = .32$). Students from both campuses felt better prepared for the exam as a result of participating in the review.

Question 4: *Are the actual grades earned by the students attending a voluntary exam review session related to increased self-efficacy?*

Table 3

Student average by campus on major assignment (eight for each course)

Campus	Mean	SD
One	82.63	15.83
Two	75.00	20.09

A *t*-test was conducted to determine the differences in mean major assignment scores by campus. The campus one average on major assignments was significantly greater than the campus two average on major assignments ($t = 3.20, p = .002, d = .42$). Note that only students on campus one had a midterm review followed by a midterm test, for which they received added classroom engagement and feedback from the professor. These added interactions with the professor may have had an impact on the mean major assignment scores, especially those completed after the midterm exam and before the final.

Question 5: *How different are the exam grades for students who attended a review compared to the performance of students who did not?*

For campus two only a *t*-test was conducted to determine the mean exam score for students attending the exam review session compared to those who did not ($t = 3.60, p = .001, d = .93$), suggesting a statistically significant difference of exam scores ($N = 27$, mean exam score 85) for those who participated in the review compared to those who did not ($N = 41$, mean exam

score 77). These findings suggest that students generally felt greater self-efficacy as a result of participating in at least one exam review, which also resulted in higher exam scores.

Descriptive statistics were also run for the two campuses to determine the final grades on major grade markers for all students attending the review.

Table 4

Student major assignment average by campus

	Mean	SD
Final quiz average	73.91	14.80
Final test	87.14	13.24
Final major assignments	79.74	17.91
Final course average	82.33	11.88

Question 6: *What percentage of students said they would usually attend an exam review session if it was offered (in place of only offering a reading day)?*

Students were asked if they would usually attend an exam review session if it was offered in place of a reading day and 70% responded “yes”, while 30% responded “sometimes”. Two students said “no”, indicating they would not attend a review session. Comparing the feedback from campus one and campus two, 74% of campus one respondents said they would always attend reviews, 25% said sometimes and 1% said never. Meanwhile at campus two, 62% said they would always attend the reviews and 38% said they might attend sometimes.

When asked if they would voluntarily participate in future exam review sessions offered by other professors, resulted when more than expected at campus one said yes and fewer than expected at campus two said yes ($\chi^2=6.175$, $p=.013$). While the number of attendees at campus one ($N=172$) were different than the number at campus two ($N=27$), the results suggest a difference in focus by the two populations. Campus one students saw a greater benefit in attending exam reviews, feel a greater self-efficacy as a result of doing so, and would continue with the practice if offered on a regular basis in the future by other faculty members. Conversely, students at campus two took part in the review sessions in significantly smaller numbers. Those that did, felt increased self-efficacy as a result of doing so and yet a smaller number definitively said they would always participate in reviews in the future if they were offered by other professors. In spite of the differences between the two campuses, most students connect an increase in self-efficacy as a result participating in the review and would likely participate if it became regular practice in the future.

Summary and Conclusions

Summary

All students are challenged to master academic competency. Many elements contribute to academic success including development of self-concept, passion for the subject, setting personal goals, maintaining minimum programmatic performance requirements, connection with the teacher, and ability to perform with and learn from peers in the public arena of a traditional classroom setting. As students continue their education in college the assumption is that with

their maturity and experience as a student comes greater independence in being able to choose what classes to take, when to schedule classes, what class work needs to be completed and in what order, how to study for an exam and for how long. From a solid self-concept and maturity comes the development of self-efficacy: the judgment of who one is and one's capability to organize and execute a specific course of action based on the level, generality and the strength of task performance. If a student feels confident in his/her skills and knowledge, has clear guidelines on what needs to be accomplished with the task, and is part of an environment that is conducive to performance, then the student should be able to regulate behaviors in such a way that helps ensure academic performance. In other words, as self-efficacy develops, so too does motivation to become organized, self-regulate, be proactive, set a plan of action, and be self-reflective.

This study started with the desire to determine the relationship between voluntary student participation in optional exam review sessions with self-efficacy and academic performance. Undergraduate students from a variety of majors on two different college campuses took two different courses in the social sciences as part of their program requirements. Students were given the option to participate in an in-class, professor-led, group exam review as a way of preparing for the exam. Students were made aware of the exam review(s) well in advance of the date so that they could proactively schedule to attend. Not all students attended the reviews. Those who did attend the review completed a survey that enabled them to answer a variety of questions related to primary incentives for participating in the review, convenience of the review and whether or not they felt more capable to succeed on the exam as a result of participating in the class review. Reported student self-efficacy was then compared to academic performance on quizzes, major assignments and the final exam

Conclusions

Primary Incentives for Participating in the Review

Descriptive statistics were used to determine that most students ($N=199$) who volunteered to participate in the exam reviews did so because they recognized the need to study (18%), and others felt that studying as a group, with the professor, would help them to be better prepared for the exam (33%). For 39% of students needing a higher score on the exam was their primary incentive. Each of these responses, including the comments that were written as part of the "other" category, suggest that the college students recognized a need to do well on the exam and this finding is in alignment with the research conducted by Bandura & Schunk (1981). and Feather (1982).

Convenience of the Reviews

Attendance at reviews was high. As indicated by descriptive statistics performed on the data, 80% of all students chose to attend optional final reviews ($N=199$) while 20% chose not to attend ($N=51$). Attendance at exam reviews was higher in the 3000 level course (95%) compared

to those students enrolled in the 2000 level course (40%). It is unclear what caused the difference in attendance rates between the two courses, but the generally high attendance rate may be linked to the studies by Atkinson (1957) and Feather (1982), who sought to measure the expectation that if we engage in a certain behaviors then certain outcomes will occur. This difference may also be attributable to the fact that older students may have a different focus and commitment to their academic performance than younger students.

Self-Efficacy As a Result of the Reviews

When students commit to attending and participating in exam review sessions, Bandura (1999) found that motivation, behavior and development within a network of reciprocally interacting influences will occur. This was supported in the study, as 94% of students felt a greater self-efficacy as a result of having participated in the review. However, there was no relationship found between campus affiliation and feeling better prepared for the test. Students from both campuses felt better prepared for the exam as a result of participating in the review.

Changes in Academic Performance Based on Review Participation

The mean score on the exam for students who attended the review was eight points higher than those students who did not attend. These rewards for having attended the exam review and actually having earned a higher score on the exam enhance efficacy and suggest that progress in learning was made (Schunk, 1991). A *t*-test found statistical significance between the exam scores of those students who attended the review and those who did not. Those who attended reviews performed stronger academically compared to those who did not. These findings suggest that students generally felt greater self-efficacy as a result of participating in at least one exam review, which also resulted in higher exam scores. Considering the small sample size of this test, however, the results are not likely generalizable.

The findings of this action research study combined with further research of the effects of students' attendance at exam review sessions may reveal a valuable tool for faculty members to help build student self-efficacy in real time. Students who feel as though their self-efficacy is high have shown evidence of increasing academic performance.

Teachers have the ability to benefit from students experiencing stronger self-efficacy as well. Assuming that academic performance is a reflection of mastery of course objectives, offering exam review sessions may also result in teachers experiencing a greater sense of efficacy as a result of their teaching, while students feel more accomplished and motivated related to their efforts in the course. In the long run the outcomes of this study could help encourage faculty members to alter the way they teach in order to allow time in the course schedule for exam review sessions that reinforce the course information and/or encourage students to build their confidence in communicating course content. The outcomes may also encourage school administrators to build class period(s) into the term schedule in order to accommodate review session(s) prior to major exams.

Limitations/Delimitations

Sample Characteristics

The population sampled included all students enrolled in two social sciences courses, which reflected students of a variety of undergraduate majors and at various stages of degree completion, ranging from sophomores to seniors. Most students enrolled in the courses because it was a requirement for degree completion. One weakness of the study might be that the courses were not electives and therefore students' level of interest in/level of commitment to the course may have influenced their level of participation and their academic performance.

Since these courses were taught at both campus one and campus two, the findings also provided an indication of whether there is a different level of commitment by the students on each campus. Although the campuses are less than five miles apart, the primary majors attending classes at campus one reflect mostly food-service and nutrition-related majors, perhaps reflecting a certain culture, work ethic or motivation driving self-regulation that differs from the students at campus two. The primary majors attending campus two reflect mostly business, marketing and hospitality majors.

Of the two courses surveyed, one of them (campus one) was attended in disproportionate numbers of students compared to the other. In addition, the majority of students taking the course on campus one may have had minimum ongoing performance requirements higher than the average student enrolled in other majors at the university, and reflected in the course taken by the students at campus two. This may have influenced the number of students who attended the exam reviews since the emphasis may have been higher for them to score better on the exams so they can remain studying in that program.

Finally, this study did not include freshmen. Students in their first year of school may be less committed to their studies than upperclassmen, thus the resulting participation levels in the exam reviews may be higher than if the sample included freshmen students as well. The study did, however, include students that were at various stages of their undergraduate progress, primarily composed of sophomores, juniors some seniors as well.

Participation

Not all students enrolled in the two social sciences courses across five sections chose to participate in the study. Only those students who attended the exam review were asked to complete the self-efficacy survey. Since the university has a liberal attendance policy and students may choose whether to attend class, or the review, there was no effort made to contact students who were unavailable or disinterested in participating in the review. Since this study was conducted over the course of one year, students enrolled in terms ranging from fall to winter to spring were included and therefore the findings should reflect an average motivation throughout the academic year.

Accuracy of Perceived Efficacy

Students tend to overestimate their academic ability (Pajares, 1996b). Consequently, younger students' appraisals (those in course two) of their abilities and understanding of the course content may have been overestimated compared to the perceptions of the older students (in course one) who had more experience taking higher level courses from a variety of professors. The younger students volunteering to attend an exam review session may have overestimated the self-efficacy achieved as a result of participation and the ultimate impact it could have on their actual exam performance. Likewise those choosing not to participate in the exam review may have overestimated their ability to do well on the exam.

The measure of self-efficacy used in this study could be reconsidered. There may be a more effective way of measuring self-efficacy than the simple yes or no response required on the survey. Bandura defined self-efficacy as the judgment of one's capability to organize and execute a specific course of action to achieve a specific educational performance (1977a). The method chosen for measuring self-efficacy on the survey, failing to determine the level or extent to which the individual felt more confident. Other studies in self-efficacy, including those by Wood and Lock (1987) and later modified by Choi (2005) utilize a 7-point Likert scale ranging from 1=*strongly disagree* to 5=*strongly agree*) and asked questions on different task areas related to the course such as concentration in class, memorization, focus on exam, understanding of class concepts, expansion of concepts, concept discrimination, and note-taking.

Contextual Causation

It is possible that students' self-efficacy and academic performance could have improved during the term, as a result of a natural learning curve but also due to superior teaching and increased experiences with course content, comfort-level in the class which might reflect increased participation levels and risk-taking in responding to challenging questions, or a combination of these factors. Therefore student academic performance may have been a result of student learning and personal growth as opposed to strictly their sense of self-efficacy related to the reviews. When comparing voluntary attendance at reviews on campus one, the midterm review was more strongly attended than the final review. Lower attendance rate at the final exam review may be explained by the fact that the students knew that the exam and review format for course one remained the same from midterm and later the final. While they may have benefitted from the review prior to the midterm, they may have had to choose whether to attend the final review based on their total end-of-term work load required not just of course one, but the other courses on their schedule that term. This may have resulted in a lower attendance of the final review.

Although students in two separate social sciences courses were surveyed, students attending course one had the ability to participate in a review session prior to each of two exams—at the midpoint in the term and again at the end. This added review provided the students on campus one with more guidance and coaching from the professor, they were challenged on the midterm exam and received extensive feedback which may have not only built their self-efficacy but could have made them better prepared to take the final exam. Without data from attendance at an exam one review for course two, it is hard to determine the differences in efficacy between two sessions.

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Appendix A

Exam Review Feedback form

Please complete the following form in order to provide feedback on the review session that was conducted in preparation for the exam.

Course: _____

Student name: _____

Type of exam (circle one): unit midterm final

Term (circle one): Fall Winter Spring

Year (circle one): 2013 2014 2015

Campus (circle one): Harborside Down City

Fill in the circle next to the response that best answers the question. More than one response can be circled:

1. **What was your primary incentive for taking part in this exam review period offered by your professor?**
 - ☐ I needed to review
 - ☐ Extra credit was offered
 - ☐ I needed help studying and felt that the group review session would benefit me
 - ☐ I was required to attend by my professor
 - ☐ I was encouraged to attend by my counselor in the student achievement center
 - ☐ I want/need a higher score on my exam
 - ☐ Other: _____
2. **Was this exam review period offered on one of the reading days at the end of the term?**
 - ☐ Yes
 - ☐ No
3. **Was this exam review period offered at the same time as your class?**
 - ☐ Yes
 - ☐ No
4. **Were there other exam review sessions (at alternative times) available to choose from (for the same professor, same course, same test) that you could have chosen to attend?**
 - ☐ Yes
 - ☐ No
 - ☐ Unsure
5. **Did you feel more confident preparing for the exam as part of a group, as opposed to on your own?**
 - ☐ Yes
 - ☐ No
6. **Did the exam review session *give you the feeling of being better prepared* to take the exam?**
 - ☐ Yes
 - ☐ No
7. **If other faculty members would provide exam review periods as a standard practice every term would you participate?**
 - ☐ Always
 - ☐ Sometimes

☐ Never

(Additional comments may be written on back)